

WHAT IS CLAIMED IS:

- 1                    1.        A process for decreasing energy usage in a polyethylene  
2        terephthalate production process where following polycondensation, polyethylene  
3        terephthalate is pelletized and crystallized, comprising  
4                    a)        solidifying molten polyethylene terephthalate to form  
5        amorphous polyethylene terephthalate pellets and cooling the pellets to a temperature  
6        from about 50°C to about the Tg of the polyethylene terephthalate to form warm  
7        polyethylene terephthalate pellets; and  
8                    b)        conveying said warm polyethylene terephthalate pellets to a  
9        crystallizer, wherein the temperature of the warm polyethylene terephthalate pellets  
10       is in the range of about 50° to below the Tg of the polyethylene terephthalate at an  
      inlet of the crystallizer.
- 1                    2.        The process of claim 1, wherein said step of conveying  
2        comprises introducing said warm pellets from a step of pelletizing into a stream of  
3        water having a temperature of between about 50°C and 90°C.
- 1                    3.        The process of claim 2, wherein prior to said step of  
2        introducing said warm pellets into said crystallizer, water is removed from said  
3        warm polyethylene terephthalate pellets.
- 1                    4.        The process of claim 3, wherein water is removed prior to or  
2        during said step of conveying.
- 1                    5.        The process of claim 3, wherein water is removed by means  
2        of a foraminous screen.
- 1                    6.        The process of claim 3, wherein water is removed in a  
2        mechanical dryer.
- 1                    7.        The process of claim 5, wherein water is removed in a  
2        mechanical dryer.

1                   8.     The process of claim 2, wherein said warm pellets have a  
2     temperature in the range of 70°C to 90°C at the inlet to said crystallizer.

1                   9.     The process of claim 2, wherein said stream of water  
2     comprises water recirculated from a water removal step.

1                   10.    The process of claim 6, wherein no heat energy is added to  
2     said dryer.

1                   11.    The process of claim 1, wherein said step of conveying  
2     comprises introducing said warm pellets from said step of pelletizing into a gas  
3     stream.

1                   12.    The process of claim 11, wherein said gas stream, prior to  
2     contact with said pellets, has a temperature in the range of 40°C to 90°C.

1                   13.    The process of claim 11, wherein said gas stream, prior to  
2     contact with said pellets, has a temperature in the range of 50°C to 70°C.

1                   14.    The process of claim 11, wherein prior to said step of  
2     introducing said warm pellets into said crystallizer, water from said steps of  
3     solidifying and/or pelletizing is removed from said warm polyethylene terephthalate  
4     pellets.

1                   15.    The process of claim 14 wherein said water is removed in a  
2     mechanical dryer.

1                   16.    The process of claim 11, wherein said warm pellets have a  
2     temperature in the range of 70°C to 90°C at the inlet to said crystallizer.

1                   17.    The process of claim 1, wherein prior to said step of  
2     pelletizing, water is removed from said solidified strands by a blast of air.

- 1                    18.    The process of claim 1, wherein said warm polyethylene
- 2    terephthalate pellets are conveyed directly to said crystallizer without intermediate
- 3    storage.